RELINER® INSIDE DROP SYSTEM SPECIFICATIONS

1. PRODUCT NAME

RELINER® INSIDE DROP SYSTEM
U.S. Patent 6074130 Canadian Patent # 2269565
All RELINER Products are proudly made in the U.S.A.

2. MANUFACTURER

RELINER®/Duran Inc.
9 Matthews Drive, Unit A1/A2
East Haddam, CT 06423
Phone: (800) 508-6001, (860) 434-0277
Fax: (877) 434-3197
E Mail: info@reliner.com
Web site: http://www.reliner.com

3. PRODUCT DESCRIPTION

Basic Application: RELINER® INSIDE DROP SYSTEM is a plastic composite collection device that facilitates the controlled drop of effluent into the main stream flow of a sanitary manhole. The Drop Bowl permits easy inspection and cleaning without the need to enter the structure. The custom made adjustable stainless steel straps fully support the drop pipe.

Advantages of the INSIDE DROP SYSTEM by RELINER®:

- Reduce maintenance
- Eliminate confined space entry
- Speed Inspection
- Simplify cleaning
- Reduce turbulence and odor
- Solids and liquids remain together
- Erosion of structure eliminated
- High corrosion resistance
- Allow workers to enter structure without risk of effluent contact
- Increase pump life in Wet Wells

Composition and Materials: RELINER® DROP BOWL is hand fabricated in the USA from marine grade fiberglass. The clamping pipe supports are of 304 or 316 stainless steel with 18-8 stainless nuts and bolts.

These materials have extremely high resistance to sewer acids while providing very smooth, low maintenance assemblies.

The open design allows for grade level inspection and cleaning while containing the incoming material and conducting it smoothly into the main flow of the system.
The RELINER Drop system is compatible with virtually all types of manhole construction and rehabilitation technologies and materials.

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4. TECHNICAL DATA

RELINER® INSIDE DROP components consist of
1) Standard size composite Drop Bowls
2) Stainless steel adjustable clamping brackets

RELINER composite components are hand and chopper gun laminations of these properties:

Physical Properties of Unsaturated Polyester Resin Reinforced Laminates
(33 / 66 Glass / Resin 1.5 oz mat Laminates .125 in.)

Flexural Strength	(psi)	ASTM D-790	27,100
Flexural Modulus	(psi)	ASTM D-790	1,157,000
Tensile Strength	(psi)	ASTM D-638	16,700
Tensile Modulus	(psi)	ASTM D-638	1,457,000
Tensile Elongation	(%)	ASTM D-638	1.54
Hardness, Barcol 934.1		ASTM D-2583	55 - 60

Physical Properties of ISO Gel Coat

	Room Temperature Cured for 45 hours	Post Cured at 50 for 24 hours
Tensile Strength	6,218	6,581
Elongation, %	2.70	1.90
Flexural Strength, psi	11,363	11,329
Heat Distortion, °F	0.544×10^6	0.713×10^6
Mandrel Flex, Mandrel Diameter in Inches	--	1.0

Stainless steel clamping bracket materials:
304 or 316 series non-magnetic stainless steel - 11GA
18-8 series non-magnetic stainless steel 3/8 x 18

Sample Specification for RELINER® INSIDE DROP SYSTEM:

All new and/or existing manhole structures employing inside drop connections for services and collector sewers shall use the RELINER® Inside Drop Bowl components as produced by RELINER® / Duran Inc. 9 Matthews Drive, Unit A1/A2, East Haddam, CT 06423 (800) 508-6001, fax (877) 434-3197 or equal. Bowl size shall be determined by incoming pipe sizes and flow rates. The bowl shall be installed as per manufacturer's instructions using stainless steel fasteners. The drop pipe of SDR 35, Schedule 40 or other shall be securely attached to the manhole wall using stainless steel RELINER® Adjustable Clamping Brackets and stainless steel fasteners. Bracket interval shall be 4 feet maximum (minimum of 2 brackets). The connection of Drop Bowl to drop pipe shall be by flexible external pipe coupler. The turn-out at the base end of the drop pipe shall be accomplished with an appropriately angled PVC pipe elbow (45 degree recommended).

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5. INSTALLATION

1. Select **Drop Bowl** of size appropriate to flow rate and pipe diameter.
(Examples: The "A" Bowl with 4" outlet will service up through full 6" inlets. The "A" Bowl with 6" outlet will service up through full 8" inlets. Can be used for 10" & 12" inlet moderate flows.
The "B" Bowl with 8" outlet will service up through full 10" inlets. The "B" Bowl with 10" outlet will service up through full 12" inlets. Can be used for 15" and 16" moderate flows. Larger sizes and flat configurations are also available) A pipe downsize is possible in most applications.

2a. Trim incoming pipe so that only 2" maximum protrudes into manhole.

2b. For improved flow control, cut a "V" shaped notch at bottom edge of incoming pipe.

3. Center Drop Bowl directly under incoming pipe, allow approximately 1" clearance between pipe and bowl.

4. Attach Drop Bowl to manhole wall with 3/8" diameter stainless steel anchors (See following instructions).

NOTE: A & B Bowls are best installed with (4) 3/8" expansion anchors

NOTE: 24 & 30 Bowls are best installed with (6) 3/8" expansion anchors

NOTE: 36 & 48 Bowls require (8) & (10) respectively 3" Wedge Anchors – see install instructions on the other side

NOTE: Fiberglass Manhole Installation Requires Special bolts!!!!!!— see install instructions on the other side

(1) Drill a 3/4"hole into the base material to the required depth (approximately 1- 1/4" deep.)

(2) Blow the hole clean of dust and other material.

(3) Insert the anchor into the hole (Lead shield out).

(4) Position a setting tool or a 9/16 socket against the anchor outer cone. (The outer rim of the tool or socket should seat onto the lead shield rim.)

(5) Using the tool or socket, set the anchor by driving the lead sleeve over the cone using several sharp hammer blows. (Be sure the anchor is at the required embedment depth.)

(6) Position the fixture, insert screw or bolt and tighten.

5. Cut and mount SDR 35 PVC drop pipe of diameter appropriate to Drop Bowl size and flow using RELINER adjustable stainless steel clamping brackets. Use a minimum of 2 brackets with a maximum spacing of 4 feet (RELINER clamping brackets will adjust to allow drop pipe to maintain correct stand off from wall).

6. Connection from Drop Bowl to drop pipe shall be by flexible external pipe connector ("Fernco" recommended.)

7. Install appropriate pipe elbow to provide smooth transition into channel flow. (We recommend a 45 degree elbow.)

Our Drop Bowl warranty is void if the drop pipe is not installed with the correct RELINER pipe support brackets as these brackets fully support the drop pipe and hold it off the wall the correct distance. (see #5 above)

OPTIONAL DROP BOWL INSTALLATION ANCHORS -- These parts are shipped assembled.

3/8 X 1" X 16 18-8 stainless hex cap screw full thread, 3/8 18-8 stainless washers, 3/8 16 x 1-1/4 lead tamp-in expansion anchors

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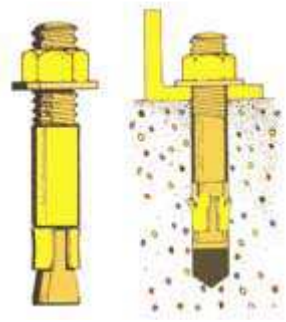
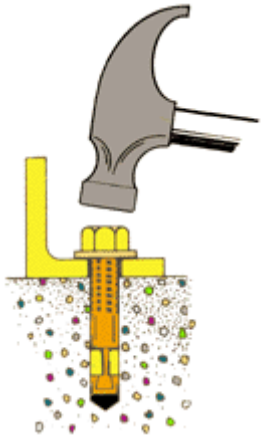
Concrete Wedge Anchor Installation



How to install

1. Drill hole in concrete (hole dia. same as thread dia.)= (3/8") maximum depth of hole could be any depth beyond minimum recommended depth. Clean out hole of all debris.



2. Place nut on the end of the wedge anchor (to protect the threads of the wedge anchor during installation) Drive wedge anchor into drilled hole through fixture so that nut is flush with fixture.

3. Tighten nut until wrench resistance is felt (approximately 3 to 4 turns of the nut after snugged up) anchorage is now complete.

Stainless Drive Screw for Fiberglass Manholes Installation

(1) Drill a 1/4" pilot hole into the base material
(2) Insert the self-tapping 3/8" stainless hex head screw and turn clockwise.
(3) Run the screw in until the head flange is in contact with the structure.
(4) Remove the screw and install the part. Do not over-tighten, around 10 to 15 # of torque is all that is required. (if ground water is high, set screws with 3M 5200 sealant

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6. AVAILABILITY AND COST

RELINER® products are manufactured by Duran Inc. of East Haddam, CT and are sold nationally through local distributors and :

RELINER®/Duran Inc.
9 Matthews Drive, Unit A1/A2
East Haddam, CT 06423
800-508-6001
860-434-0277
860-434-3195 Fax
Http://www.reliner.com
info@reliner.com

Price varies with complexity. Contact sales for quote 800-508-6001or visit our web site at www.reliner.com for suggested price list.

7. WARRANTY

Contact sales at above numbers for copy of warranty.

8. MAINTENANCE

Normal maintenance consists of routine inspection and flushing with a hose or pressure washer.

9. TECHNICAL SUPPORT

For technical consultation or additional information please email: info@reliner.com or call (800) 508-6001

Visit our web site at: **http://www.reliner.com**